4. Title and Subtitle: Investigation of Prototype Volcano-Surveillance Network (SR 145)	5. Report Date
	6. Performing Organization Code
7. Author(s): Peter L. Ward and Jerry P. Eaton (IN 384)	8. Performing Organization Rept. No.
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15. Supplementary Notes

16. Abstracts

A volcano surveillance system utilizing 23 multilevel earthquake counters and 6 biaxial borehole tiltmeters is being installed and tested on 15 volcanoes in 4 states and 4 foreign countries. The data are transmitted to the ERTS-A satellite and relayed to Menlo Park for analysis. Installation was completed in 1972 on the volcanoes St. Augustine and Iliamna in Alaska, Kilauea in Hawaii, Baker, Rainier and St. Helens in Washington, Lassen in California and at a site near Reykjavik, Iceland. Installation continues in 1973 on the volcanoes Santiaguito, Fuego, Agua and Pacaya in Guatemala, Izalco in El Salvador and San Cristobal, Telica and Cerro Negro in Nicaragua. Standard seismometers are being placed near most event counters in this initial program in order to verify that the counters are discriminating earthquakes as anticipated. Local earthquakes are being recorded at nearly all sites. All equipment is proving to work quite reliably and stably in a wide variety of environments. More than 3000 messages per month are being processed as of January, 1973.

17. Key Words and Document Analysis. (a). Descriptors

Volcanoes
Event Counters
Tiltmeters
DCP

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Type II Progress Report

ERTS-A

a. Title: Investigation of prototype volcano-surveillance network
ERTS-A Proposal No.: 145

b. GSFC ID No. of P.I.: IN 384

c. Problems: Fieldwork was impeded by bad weather typical of Alaska and the Cascades in September and October. The result was slightly increased fieldwork expenditures. Bad weather in Alaska forced the field program to be cut short. Two DCP antennas became defective because of poor solder joints; these were repaired. Two programmer cards and two transmitter cards in the DCP's failed and are being replaced through Duane Preble in Mississippi.

d. Accomplishments: All equipment was designed and built. Event counters with DCP's were installed on Mts. Lassen, Rainier St. Helens, and Mt. Baker in the Cascades and Mt. St. Augustine and Iliamna in Alaska. Iliamna was chosen when bad weather made it impossible to reach Mt. Redoubt or Mt. Spurr as planned. The tiltmeter on Lassen was replaced after it was destroyed by lightning. Two event counters and three tiltmeters (one of which was funded by this project) were installed on Kilauea Volcano. One event counter was placed on Reykjavik, Iceland. Data reception from these sites is quite sufficient at the 90-second transmission rate. We decided to send to Iceland the instrument intended for Mt. Redoubt after installation in Alaska became impossible. This choice provides a test of the range of the DCS and a different environmental test of the system. Installation was done at no expense to this project.

More than 3000 messages from the DCP's are being processed each month. The instruments are operating stably and reliably.

All sites in Central America have been selected and owners permissions obtained. Installation begins in January, 1973.

e. Scientific results: None yet. Category 3C.

f. Papers or reports: None yet.

g. Recommendations: Next time, please fund programs requiring significant fieldwork early enough so that reliable equip-

ment can be developed and the DCP's can be installed before or soon after launch. We will probably not complete installation until 9 months after launch.

1. Changes in Standing order forms: None.

2. ERTS Image description forms: None.

3. Changes in Data Request forms: None.

INVESTIGATION OF PROTOTYPE VOLCANO-SURVEILLANCE NETWORK

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1 January 1973

Type II Progress Report for Period 1 July 1972 to 31 December 1972

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